

Safe working with mobile plant

EBRD briefing note



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Introduction

Mobile plant comes in a variety of shapes and sizes and includes common equipment, such as excavators, cranes and dumper trucks. This equipment can introduce a number of hazards into the work area that may cause serious accidents if operated incorrectly. In addition, mobile plant can become unsafe if not properly maintained in accordance with the manufacturer's instructions. One of the most common causes of accidents with mobile plant is when workers or members of the public approach the equipment while it is in operation. Work on underground services, such as pipes and cables, especially in and around public highways, often involve small, restricted work areas that can create additional risks.

Risk assessment

A risk assessment should be prepared before operating mobile plant to identify any hazards, who is at risk, how they could be harmed and the control measures needed to prevent accidents. When using mobile plant in any environment, the following common risks may need to be assessed:

Contact with a person: The most common accidents are workers or members of the public being run over by mobile plant or crushed between it and another object. Vulnerable pedestrians may be at higher risk, as they may be less able to identify or react to large, constantly moving equipment.

Overturning: When operated on a slope that is outside safe operating parameters, mobile plant can overturn. If the operator is not wearing appropriate restraints, they can be thrown and crushed by the equipment as it tips over. Others in the immediate area can also be crushed.

Being thrown from the equipment: If ground conditions are significantly uneven and mobile plant is in operation, the equipment may not overturn, but may throw the operator from their seat if restraints are not provided and/or used.

Failure of plant: If mobile plant breaks down due to the failure of or damage to a hydraulic system (such as a burst pipe or detached connector), the failure may result in unexpected or unintended movement.

Unsecured attachments (buckets): A serious but common event on excavators is failure to correctly position the safety locating pins on excavator buckets. If this goes unnoticed, it can result in the bucket suddenly dropping from a great height, potentially onto a worker below.

Contact with overhead obstructions: When operating mobile plant below overhead objects, there is a risk of contact. Overhead electrical cables are commonly struck and can result in serious injury or death to the operator or anyone in the immediate area.

Traffic management

When any mobile plant is in operation, a traffic management system should be in place. The system should keep the public and other mobile plant physically segregated. The traffic management system should ensure that pedestrian routes are clearly marked with signage, fencing, barriers or gates as required. Signs should provide clear information on the dangers. They should also direct pedestrians and other vehicles to a safe route, ideally away from moving equipment and work areas.

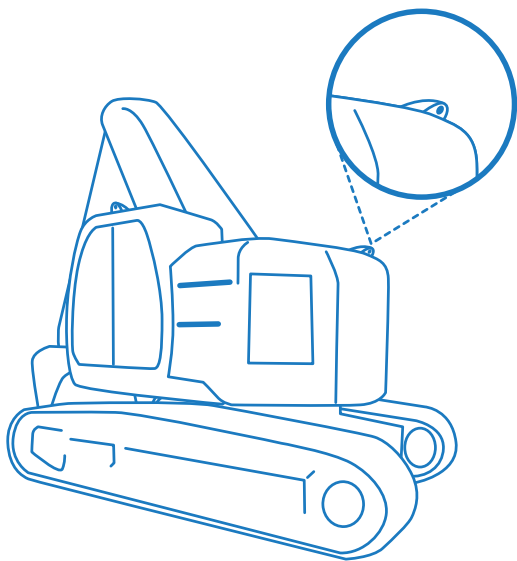
Correct selection of plant

The selection of mobile plant should consider the task and the local environment, especially when the size of the work area may be restricted. Smaller mobile plant may be needed where space is limited. Companies should consider the visibility of personnel in the work area, so that mobile plant operators can identify them in the event that they come too close to the moving equipment. High-visibility clothing should be mandatory for all workers.

Visibility

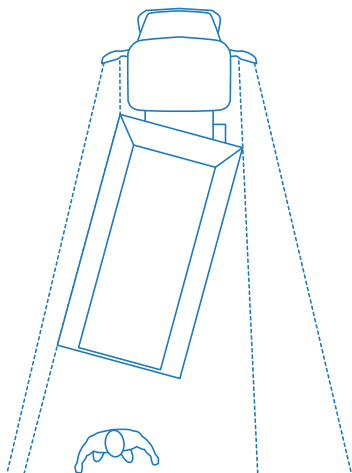
Mobile plant operators should have a clear field of vision while their equipment is in operation. They should have an unobstructed 360° degree view around the equipment, covering all blind spots. It is important to be aware of local rules and legislation on the use of mobile plant, especially if the equipment is to be operated on a public highway. It is possible to achieve 360° degree visibility around equipment using mirrors or closed-circuit television (CCTV) cameras. Any mirrors or CCTV cameras should be checked daily to ensure that they are clean and, if needed, replaced promptly if broken.

Figure 1. CCTV cameras are often mounted on excavator counterweights to allow operators to see directly behind them



Many vehicles and mobile plant have blind spots, so operators need to take great care when the equipment is in motion. Where mirrors or CCTV are not fitted, traffic marshals (or “flagmen”) should assist the plant operator from a safe distance when the equipment is moving. Traffic marshals should observe all blind spots during movement – although mirrors and CCTV are the preferred option. Many traffic marshals are injured by mobile plant and it is important they are trained to safely guide moving equipment and are aware of the hazards, risks and control measures needed. Traffic marshals should always have a clear means of communicating with the plant operator and should not approach moving equipment until the plant operator has acknowledged them and signalled that it is safe to do so. Signage should be affixed to equipment to clearly inform others of blind-spot areas.

Figure 2. The limited visibility of truck mirrors means the driver cannot see the pedestrian behind the vehicle; a traffic marshal can assist the driver, but should never stand in a vehicle's blind spot



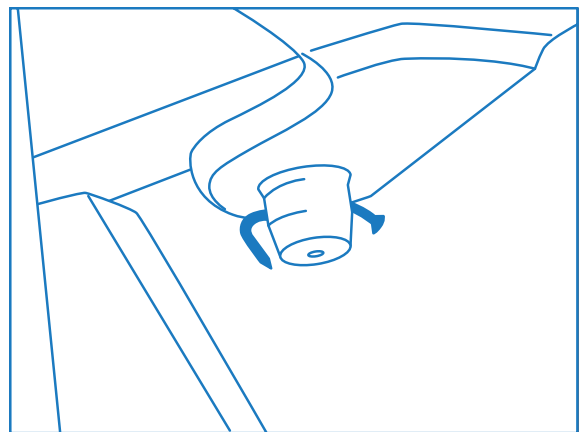
Coming close to mobile work equipment

Although additional visibility aids may be in place, the plant operator may not be looking in the right place at the right time. It is, therefore, always preferable for anyone approaching moving equipment to make eye contact with the plant operator and wait for the operator to stop and give permission to approach or pass.

Never assume the plant operator has seen you!

All plant operators need to carry out daily pre-use inspections on their mobile plant before work begins. These pre-use inspections are to identify obvious defects in the equipment, such as broken mirrors, CCTV, controls, lights, signals or warning systems that are not working correctly, as well as low fluid levels and fluid leaks that may affect safe operation. A common defect is the incorrect fitting of safety locating pins, which can cause attachments to fall off the mobile plant. A full list of pre-use inspection checks should be contained in the plant operator's handbook for the mobile plant in question. If one is not available, ask your supervisor.

Figure 3. Items such as bent nails should not be used to hold in safety locating pins; correct strength safety pins should be used, with locating rings to prevent them jumping out



Untrained workers should not be permitted to operate mobile plant. Restricting access to keys is one way to ensure that only trained and authorised personnel gain access. Keys should always be removed from the mobile plant when not in use, unless the risk assessment clearly states that keys should remain for safety reasons. If this is the case, site security should be in place to manage the risk of unauthorised use.

Excavator automated latching devices

Also called quick hitches, excavator automated latching devices are commonly used to swiftly change excavator attachments, such as buckets, breakers and cutting shears, during operation. These attachments are particularly dangerous if not correctly used. Often, the safety pins that securely fix these attachments into position are not correctly positioned or have become damaged or worn. This can result in the safety pins falling out during movement, releasing the excavator attachment and causing it to drop to the ground or onto a person below. Many workers have been seriously or even fatally injured as a result of such incidents.

When working with excavator buckets:

- ▶ Workers should be kept at a safe distance while the mobile plant is in operation.
- ▶ The plant operators are responsible for the correct safety pins being used and must undertake a visual check to confirm.
- ▶ The correct manufacturer's safety locating pins should be used and should **NOT** be substituted with improvised devices, such as wire, bent nails or rebar. These devices will cause the quick hitch to fail and the attachment to detach.
- ▶ If quick hitches are fitted to the excavator, the plant operator should be trained in their safe operation and made aware of the risks when using such devices.

Plant operators are responsible for the safety of workers and members of the public that may approach or be in proximity to the mobile plant they are in control of. If any person comes too close to the moving equipment, the plant operator should stop work immediately and report the unsafe act or unsafe conditions to their supervisors.

Summary

Before using any mobile plant:

- ▶ Has the correct mobile plant been selected for the task?
- ▶ Is the plant operator trained to inspect and operate the mobile plant safely?
- ▶ Is the mobile plant maintained, serviced and in good working condition?
- ▶ Are all visibility aids (such as mirrors, sensors and CCTV) in place and in good working condition, not broken, damaged or obscured/dirty?
- ▶ Are all the safety locating pins for fitting quick hitches in place? Are they the correct type and **NOT** improvised (such as wire, bent nails or rebar)?
- ▶ Are restraints fitted, serviceable and correctly used by the plant operators?
- ▶ Is a regular documented daily pre-use inspection procedure in place to confirm that the mobile plant is safe to use and to report any defects?

References

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